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# An Extension of Social Facilitation Theory to the Decision-Making Domain

Allison Wallace

Clemson University, [alwalla@clemson.edu](mailto:alwalla@clemson.edu)

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AN EXTENSION OF SOCIAL FACILITATION THEORY  
TO THE DECISION-MAKING DOMAIN

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A Thesis  
Presented to  
the Graduate School of  
Clemson University

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science  
Applied Psychology

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by  
Allison L. Wallace  
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Dr. Fred S. Switzer, III, Committee Chair  
Dr. Robin Kowalski  
Dr. Cynthia Pury

## ABSTRACT

Social facilitation has traditionally been defined as the influence of the presence of others on an individual's task performance. Social presence has been shown to either facilitate or impair performance based on various moderating variables, including the more recent investigation of individual differences, but researchers have yet to extend social facilitation theory to the domain of decision-making. This study evaluates the effect of social presence on individual decision-making, using the personality traits of extraversion, neuroticism, self-esteem, social anxiety, and trait anxiety as potential moderating variables of this effect. We found that affiliative individuals, marked by high extraversion and high self-esteem, demonstrated superior decision-making effectiveness in the social presence condition of a decision-making task. Similarly, avoidant individuals, marked by high neuroticism, high social anxiety, high trait anxiety, and low self-esteem, demonstrated superior decision-making effectiveness in the alone condition of a decision-making task. The influence of these findings on social facilitation theory and the implications for real-world application are discussed.

*Keywords:* social facilitation, decision-making, personality

## DEDICATION

To my loving husband, Aaron, for his emotional support through all of my endeavors.

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## CHAPTER ONE

### INTRODUCTION

Individuals differ greatly in their reaction to the presence of other individuals while completing a task. While engaged in an activity, an individual's performance may be either improved or impaired by the presence of others compared to when completing the task alone. Recent literature has shown that the influence of social presence on performance outcomes is dependent on the personality of the individuals involved. Thus, through an understanding of the personality of individuals, we can determine optimal settings for task performance. Individuals with personality traits that trigger negative reactions to social presence will experience the best performance outcomes while performing tasks alone, whereas individuals with personality traits that trigger positive reactions to social presence will experience the best performance outcomes while performing tasks in the presence of others. This theory, referred to as social facilitation theory, has yet to be applied to the behavioral domain of decision-making. Through an empirical investigation of the relationships among social presence, personality, and decision-making, we can take the first, crucial step in understanding how to optimize decision-making outcomes (e.g., efficiency, productivity, quality) based on the personality of involved individuals.

Through the course of this paper, we first explain the lengthy evolution of social facilitation theory, leading up to the recent discovery that personality is the crucial moderator in the relationship between social presence and performance. Second, we examine the current literature that assesses various personality traits as moderators,

isolating concepts which require further exploration. Third, we demonstrate the importance of the application of social facilitation theory to the decision-making domain. Finally, we present the results of a recent study which seeks to apply social facilitation theory to an individual decision-making task, examining personality moderators of the relationship between social presence and decision-making outcomes.

### **Early Studies of Social Facilitation**

The concept of social facilitation was first introduced by Norman Triplett in the late 1890s. Triplett (1898) observed that cyclists completed a race faster when they raced with other cyclists compared to racing alone. Specifically, cyclists who competed against each other produced the fastest times, cyclists who raced against a clock and also had the assistance of a pacesetter produced the next fastest times, and cyclists who raced against a clock without a pacesetter produced the slowest times. Upon this discovery, Triplett then decided to test the speed with which children turned a fishing reel while performing alone as compared to performing side-by-side with another child. Triplett found that most children reeled the fishing rod faster while in the presence of another child who was also reeling, as compared to children reeling the fishing rod alone. Triplett offered several explanations for these findings. He argued that the presence of another reeler, later termed a *coactor*, may stimulate a feeling of competitiveness which motivates the target child to reel faster. Triplett also proposed that the presence of another person performing the same activity might simply stimulate a thought to move faster. Later researchers ventured to tease apart social facilitation effects from competition effects; however, the importance of Triplett's initial studies cannot be understated. These studies

demonstrated that people perform differently in the presence of others, even when they are not interacting.

Allport (1920) coined the term *social facilitation*, which he defined as “an increase in response merely from the sight or sound of others making the same movement” (1924, p. 262). Allport’s studies were designed to minimize competition effects, which were a potential confound in Triplett’s earlier studies. Allport’s first experiments (1920) used two types of mental tasks in which he told participants to avoid making comparisons with other people, stressing that the tasks were not competitive in nature. In a word association task, participants were given a word with which they were asked to free-associate, meaning that they should write down every word that came to mind. In an argument-generation task, participants wrote down any argument they could produce from a classic literature selection. For both tasks, participants performed both alone and in groups. Allport found that people performing in groups made a higher number of free-associations and generated a higher quantity of arguments from the passage; however, the quality of the arguments was greater when they were created in the alone condition.

Allport’s (1920) results were the first to suggest that social presence may have varying effects depending on the type of task used. Allport also proposed that social presence facilitates an idea or thought of movement and thus encourages movement. Allport also noted that rivalry stimulates increased action, suggesting that over-rivalry, distraction, and emotions could all lead to impaired performance (Aiello & Douthitt, 2001).

Triplet (1898) and Allport (1920) conceptualized social facilitation through coaction, wherein individuals perform the same task in each other's presence rather than performing alone. Neither of these early researchers considered the potential effects that an audience may have on individual performance, later referred to as the passive observer paradigm (Dashiell, 1930) or audience effects (Zajonc, 1965). Dashiell (1930) proposed that several forms of social presence exist, including the following: "(a) the mere presence of observers, (b) the presence of others express attitudes about the individual (later theories would refer to this as an evaluative audience), (c) the presence of noncompeting coactors, and (d) the presence of competing cofactors" (Aiello & Douthitt, p. 165). Dashiell's studies compared the effects of these four different forms of social presence and found that, in terms of speed when performing a variety of tasks, the observed group was typically fastest and the group of competing coactors was typically second fastest.

These early studies provided insight into the possible explanations for facilitation and impairment effects resulting from the presence of others. However, these study results were highly inconsistent, likely due to small sample sizes and poor control over experimental conditions. Guerin (1993) points out that many of these early experiments designed to compare performance of individuals influenced by social presence and performance of individuals working alone often had an experimenter in the room during the "alone" condition. While valid conclusions cannot be drawn from these early studies due to these serious confounds, the studies made strong contributions to social facilitation theory, raising many of the questions that still predominate today's literature.

## **Theories of Social Facilitation**

Numerous theories of social facilitation have been developed over the years. Five of the main theories are briefly discussed below.

### **Drive.**

Zajonc's (1965) influential review represented a milestone in the development of social facilitation theory. Zajonc argued that social presence facilitates performance of simple, well-learned tasks and inhibits performance of complex, unlearned tasks. Zajonc acknowledged the inconsistencies in previous studies where some researchers found that performance is enhanced by the presence of others, whereas others found that performance is impaired by the presence of others. Based on the Hull-Spence drive model (Spence, 1956), Zajonc's theory of social facilitation contended that an individual's drive levels automatically increase in the presence of others, and that the increase in drive or arousal can either enhance performance of simple tasks or impair performance of complex tasks. Drive theory posits that increased drive enhances the release of dominant answers and inhibits the release of subordinate answers. On simple tasks, the dominant response from an individual is usually correct, leading to performance enhancement; on complex tasks, the dominant response is usually incorrect, leading to performance impairment. Although other theories of social facilitation have emerged and challenged Zajonc's drive theory, Zajonc's studies were crucial to the evolution of social facilitation theory in that they introduced task complexity as a moderator of social facilitation effects on performance, explaining the seemingly inconsistent results of earlier studies.

### **Evaluation Apprehension.**

Shortly after Zajonc's original drive theory was proposed, Cottrell (1968, 1972) asserted that the mere presence of others was not enough to increase drive and would not necessarily lead to social facilitation effects. Cottrell argued that only when individuals are concerned about how others might evaluate them would drive levels increase and lead to either social facilitation or impairment effects. Cottrell's theory of evaluation apprehension is similar to Zajonc's drive theory (1965) in that both theories propose drive as a mediator between social presence and performance. However, Cottrell proposed that this drive is learned as a result of past experience with social encounters. In support of Cottrell's theory, several studies have found that social facilitation only occurs when observers had an evaluative presence (Cottrell, Wack, Sekerak, & Rittle, 1968; Paulus & Murdoch, 1971). Similarly, Bond (1982) proposed a self-presentational theory in which social facilitation occurs due to the regulation and maintenance of a public image of oneself and social impairment occurs due to embarrassment following a loss of public respect.

### **Self-Awareness.**

Two additional theories of social facilitation argue that social presence causes individuals to focus their attention inwardly. Duval and Wicklund's (1972; Wicklund & Duval, 1971) objective self-awareness theory suggests that people tend to view themselves from the perspective of their observers. The salience of any difference between the current observed self and the individual's ideal self produces an undesirable state within that individual, motivating their future behavior to reconcile these

differences. In a simple task, this additional energy and motivation improves performance, but in a complex task, the extra effort leads to impaired performance.

Similarly, Carver and Scheier (1981) proposed their control theory in which social presence stimulates a process of comparing one's own behavior against a behavioral standard, stimulating a negative feedback loop in order to reduce any discrepancies with the standard. In a simple task, outcomes are expected to be high, thus motivating sustained effort. In a complex task, outcome expectancy decreases so that individuals withdraw effort, having a negative impact on performance.

### **Uncertainty.**

In a modification of his original drive theory, Zajonc (1980) suggested that social facilitation effects evolve from the uncertainty that an individual feels in a social environment. Guerin and Innes (1982; Guerin, 1983, 1993) further developed this idea in their monitoring theory. Both the modified drive theory and the monitoring theory propose that social situations pose a variety of threats to individuals, making it necessary to maintain a high level of awareness in order to react quickly in case of a threat. This high level of awareness causes an increase in arousal, which then leads to social facilitation effects. Based on uncertainty theory, one would expect the strongest social facilitation effects when an individual feels threatened, is unable to monitor the observer, or is unfamiliar with the observer (Uziel, 2007).

### **Distraction.**

The distraction-conflict theory (Baron, 1986; Baron, Moore, & Sanders, 1978; Groff, Baron, & Moore, 1983; Sanders, Baron, & Moore, 1978) argues that social

presence creates a distraction for the individual, leading to a conflict of attention. Baron (1986) suggested that this conflict of attention can have social and nonsocial causes, and is most likely triggered by one of three specific conditions: (a) the distraction is particularly interesting or difficult to ignore, (b) pressure exists to complete the task accurately and quickly, and (c) paying attention to the task and the distraction simultaneously is difficult or even impossible.

### **A New Direction**

Despite the development of social facilitation theory through a large body of research spanning over 100 years, “no single theory has emerged that can effectively and parsimoniously account for this phenomenon” (Aiello & Douthitt, 2001, p. 163). Since the existing theories previously discussed are not mutually exclusive, it is increasingly likely that two or more theories co-occur as the best explanation for observed social facilitation effects (Geen, 1989; Guerin, 1993; Uziel, 2007). More recently, social facilitation research has begun to consider that two orientations toward social presence exist. A negative orientation, reflected in the uncertainty, evaluation apprehension, and distraction theories, dominates the social facilitation literature. Other explanations, though less common, emphasize a positive orientation toward social presence, marked by high levels of self-assurance and enthusiasm. Previous studies (Cox, 1966, 1968; Geen, 1977; Henchy & Glass, 1968; Seta & Seta, 1995) have attempted to manipulate the relationships between the target individual and the observers by inducing a sense of anxiety or self-assurance. Although there is a solid theoretical argument for the distinction between positive and negative orientations toward social presence, Uziel



(2007) points out that experimental manipulations do not necessarily capture it. Uziel instead proposed the assessment of personality traits, rather than the use of experimental manipulation, to accurately capture these inherent positive and negative orientations toward social presence.

### **Personality as a Moderator**

Early researchers (Allport, 1924; Dashiell, 1935; Hollingsworth, 1935; Spence, 1956; Triplett, 1898) acknowledged the existence of individual differences in social facilitation effects, yet they did not attempt to incorporate individual differences into their various theories. After Zajonc's (1965) emphasis on task complexity as the primary moderator of social presence, later studies virtually ignored the already proven moderation of individual differences related to social presence effects on performance. Uziel (2007) notably points out that there is no theoretical basis for task complexity classification, leading to the use of a vague categorization of simple versus complex tasks. While the existence of a theoretical basis for task classification can be argued, the issue is beyond the scope of this study. The crucial idea is that task complexity has more recently been shown to be a poor moderator of social presence effects.

Bond and Titus (1983) conducted a meta-analysis of 241 social facilitation studies, finding that social presence accounts for, on average, only a very small amount of variance (approximately between 0.3 and 3.0%) in simple and complex task performance. Bond and Titus also noted the rampantly inconsistent and often contradictory results of studies, pointing to the obvious existence of moderators other than task complexity. According to Uziel (2007), only 5-7% of social facilitation studies

have measured individual differences. These studies have focused on the measurement of extraversion, trait anxiety, and self-esteem, showing that these three traits are strongly associated with the positive and negative orientations toward social presence described above. While extraversion and neuroticism are distinct from one another (Eysenck & Eysenck, 1985), both are related to self-esteem, such that self-esteem has a moderate positive correlation with extraversion and a moderate negative correlation with neuroticism (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001).

The sociometer theory of self-esteem further demonstrates the relationship between extraversion, anxiety, and self-esteem (Leary, 1999; Leary & Baumeister, 2000; Leary & MacDonald, 2003; Leary, Tambor, Terdal, & Downs, 1995). According to sociometer theory, self-esteem serves as an indication of an individual's interpersonal appeal and perceived success. In social settings, extraverts tend to exhibit assertiveness, optimism, and dominance. These behaviors lead to social approval and a sense of social acceptance, which in turn is reflected by high levels of self-esteem. On the other hand, neuroticism tends to lead to anxiety, depression, and shyness in social situations. These socially undesirable behaviors lead to social rejection and a sense of social exclusion, reflected by low levels of self-esteem. Therefore, positively oriented individuals (high extraversion and high self-esteem) demonstrate a tendency toward self-assurance and enthusiasm in both general and social environments, while negatively oriented individuals (high neuroticism and low self-esteem) demonstrate a tendency toward anxiety and apprehension in both general and social environments.

In a meta-analysis of 14 studies that measured individual differences, Uziel (2007) found that social presence is associated with performance improvement in positively oriented (high extraversion and high self-esteem) individuals and with performance impairment in negatively oriented (high neuroticism and low self-esteem) individuals. Most notably, Uziel found that personality is a more substantial moderator of social presence effects than task complexity. Stein (2009) sought to examine Uziel's (2007) assertions regarding individual differences using a true experimental manipulation rather than a meta-analysis. Stein measured extraversion, anxiety, and self-esteem together, similar to Uziel's use of negative and positive orientations, as well as separately to tease apart the social facilitation effects. Stein argued that anxiety, instead of neuroticism, was a more appropriate personality indicator to examine social presence effects. Neuroticism and anxiety, though theoretically very similar, were both measured in the current study to resolve the argument between Uziel and Stein regarding which is a more appropriate measure in regard to social presence effects. Stein concluded that personality traits indeed have an influence on whether individuals are facilitated or impaired on tasks of varying complexity, but not in the same manner theorized by Uziel. Stein found that individuals with high extraversion and high self-esteem were facilitated in the alone condition compared with the social presence condition, and that individuals high in anxiety did not change in performance between the absence and presence conditions.

From Uziel (2007) and Stein (2009), it is apparent that individual differences, specifically extraversion, self-esteem, neuroticism, and anxiety, are important moderators

of social presence effects on performance. However, given their conflicting results, further research is needed to tease apart the true personality effects. It is important to note that, although the terms *positively oriented* and *negatively oriented* accurately capture these individual differences, these terms have been used as labels for multiple other concepts in the field of psychology. In order to avoid confusion, we have chosen to use the terms *affiliative* (high extraversion and high self-esteem) and *avoidant* (high neuroticism, high anxiety, and low self-esteem) to represent these constructs.

Another unique contribution of this study involves clarification of the type of anxiety that moderates social presence effects on performance. In the previous social facilitation literature, studies which have analyzed individual differences have solely employed the construct of trait anxiety. However, sociometer theory, which serves as the theoretical foundation for explaining why individual differences matter in social presence, utilizes the construct of social anxiety. Thus, this study attempts to bridge the disconnect between theoretical basis and experimental investigation by measuring both social anxiety and trait anxiety. Based on findings from previous studies, we expect to find that trait anxiety is a moderator of social presence effects on performance, yet we also expect to find that social anxiety is a stronger moderator of social presence effects on performance, above and beyond trait anxiety.

### **A Novel Application**

Social facilitation is generally described as “an influence of social presence on individual performance” (Aiello & Douthitt, 2001, p. 173), an effect most often measured through speed and accuracy in performance. Aiello and Douthitt noted the importance

for future studies to examine the effects of social presence on other qualitative behavioral variations. However, every study from the lengthy history of social facilitation theory has focused solely on individual performance on a variety of simple and complex tasks. No study to date has attempted to extend social facilitation theory to the domain of decision-making. Social presence may have profound effects on performance in decision-making tasks, and its effects may differ from those found in the traditionally-researched individual performance tasks. Understanding how social presence affects decision-making is crucial to the field of organizational psychology because decision-making is an integral component in business, often above and beyond individual task performance. Both individual and group decision-making are critical behavioral domains for most people; however, we often have little guidance regarding the optimization of decision-making outcomes. By examining individual decision-making, we can take the first step in understanding how personality affects decision-making outcomes in the presence of others. This study therefore seeks to examine the effect of social presence on individual decision-making.

Building upon the recent studies of individual differences as a moderator of social presence on performance (Stein, 2009; Uziel, 2007), we expect that certain personality variables will have a moderating effect on performance in decision-making. Based on sociometer theory and the existence of affiliative and avoidant orientations toward social presence, we know that individuals with high extraversion and high self-esteem are predisposed to having an affiliative orientation toward social presence, and that individuals with high neuroticism, high anxiety, and low-self esteem are predisposed to

having an avoidant orientation toward social presence. An affiliative orientation indicates a tendency to approach social situations with a positive sense of challenge and enthusiasm, and the ability to focus on the task at hand. On the other hand, an avoidant orientation indicates a tendency to approach social situations with a sense of withdrawal, marked by anxiety, depression, and distraction from the task at hand (Carver, Sutton, & Scheier, 2000; Fiedler, 2001; Higgins, 1998; Isen, 1987; Mueller, 1992). Given these tendencies and the type of decision-making task being used, it is expected that affiliative individuals will experience performance facilitation and avoidant individuals will experience performance impairment. Specifically, we expect to find that individuals who are affiliative, measured by high extraversion and high self-esteem, will experience performance facilitation in the social presence condition of an individual decision-making task. We also expect to find that individuals who are avoidant, measured by high neuroticism, high social anxiety, high trait anxiety, and low self-esteem, will experience performance impairment in the social presence condition of an individual decision-making task.

*H<sub>1</sub>: Affiliative individuals will experience performance facilitation in the social presence condition as compared to the alone condition, and avoidant individuals will experience performance impairment in the social presence condition as compared to the alone condition.*

*H<sub>1A</sub>: High extraversion is related to performance facilitation.*

*H<sub>1B</sub>: High self-esteem is related to performance facilitation.*

*H<sub>1C</sub>: High neuroticism is related to performance impairment.*

*H<sub>1D</sub>: High social anxiety is related to performance impairment.*

*H<sub>1E</sub>: High trait anxiety is related to performance impairment.*

*H<sub>1F</sub>: Low self-esteem is related to performance impairment.*

Finally, we expect to find that individuals who have high social anxiety will experience performance impairment, above and beyond the impairment related to high trait anxiety, in the social presence condition of an individual decision-making task.

*H<sub>2</sub>: Participants with high social anxiety will experience performance impairment, above and beyond the impairment related to high trait anxiety.*

## CHAPTER TWO

### METHOD

#### **Participants**

Participants for the study were 49 undergraduate students enrolled in introductory psychology courses at Clemson University. Students received credit toward partial fulfillment of a research-participation course requirement, as well as the chance to win a \$50 lottery based on performance on the decision-making task. Twenty-four participants completed an individual decision-making task in a true alone condition with no experimenter present, and the other twenty-five participants completed the same task in the presence of an observer. The author served as the observer for all participants to maintain consistency in the manipulation. Basic demographic information, including age, gender, race, and educational status, were also collected. Participants were an average of 19.4 years old, 65.3% female, and 85.7% Caucasian.

#### **Measures**

##### **Personality.**

Participants completed measures of extraversion, neuroticism, self-esteem, social anxiety, and trait anxiety. All five scales are rated on a 1-5 Likert scale measuring the extent to which participants felt that each item accurately described themselves, where 1 = very inaccurate and 5 = very accurate. For negatively scored items, items were reverse-scored such that 1 = very accurate and 5 = very inaccurate. Scores for each personality scale were summed to yield total scores for extraversion, neuroticism, self-esteem, social anxiety, and trait anxiety (see Appendix A for list of items).



### ***Extraversion.***

Extraversion was assessed with a 20-item scale from the International Personality Item Pool (IPIP; Goldberg et al., 2006), a highly reliable scale with a Cronbach's  $\alpha = .91$ .

### ***Neuroticism.***

Similarly, neuroticism was assessed with a 20-item scale from the International Personality Item Pool (IPIP; Goldberg et al., 2006), a highly reliable scale with a Cronbach's  $\alpha = .91$ .

### ***Self-esteem.***

Self-esteem was assessed with the 10-item Rosenberg Self-Esteem Scale (SES; Rosenberg, 1965). Fleming and Courtney (1984) reported a Cronbach's  $\alpha = .88$  for the SES, and demonstrated a correlation of  $-.64$  between the SES and anxiety.

### ***Social anxiety.***

Social anxiety was assessed with the 12-item Brief Fear of Negative Evaluation (BFNE; Leary, 1983) scale, with a Cronbach's  $\alpha = .90$ . The BFNE is a brief version of the Fear of Negative Evaluation (FNE; Watson & Friend, 1969) scale. Individuals who score highly on this scale experience greater anxiety when in evaluative settings and report being more bothered by the possibility of receiving a negative evaluation as compared to individuals who score low on the scale (Friend & Gilbert, 1973; Goldfried & Sobocinski, 1975; Leary, Barnes, & Griebel, 1986; Smith & Sarason, 1975).

### ***Trait anxiety.***

Trait anxiety was assessed with a 10-item scale from the International Personality Item Pool (IPIP; Goldberg et al., 2006), with a Cronbach's  $\alpha = .83$ .

### **Decision-Making Task.**

The decision-making task was developed by Straus and McGrath (1994). Straus and McGrath pre-tested the task in a sample comparable to that of the current study to ensure that the task was considered interesting and was of an appropriate level of difficulty and length for the given population. The task session is 12 minutes in length. Participants were asked to decide on appropriate disciplinary actions for a fabricated case in which a graduate teaching assistant accepted a bribe from a star basketball player to change the student's exam grade. The goal of the task is to resolve the following five issues related to the treatment of both the student-athlete and the teaching assistant: (1) the student's exam and course grade, (2) the student's standing on the basketball team, (3) the student's academic standing, (4) the teaching assistant's work standing as an instructor, and (5) the teaching assistant's academic standing.

Participants were instructed to decide upon one choice from a list of alternatives for each of the five issues (see Appendix B for list of issues and alternatives). For example, the alternatives for Issue 1 are "give him his original grade on the exam", "give him a failing grade on the exam", and "give him a failing grade in the course" (Straus & McGrath, 1994, p. 90). Participants were instructed to attempt to reconcile the competing interests of the athletic department (wanting to maintain the player's athletic eligibility), the faculty (wanting to maintain the institution's academic integrity), and the university administration (wanting to satisfy both the athletic department and the faculty).

Straus and McGrath's (1994) scoring system was used to evaluate the responses to the decision-making task, yielding measures of overall task effectiveness, productivity,

and average quality. To obtain an overall measure of effectiveness, the scoring system consisted of two sets of point values for the issue alternatives. The first point set reflects the extent to which each alternative supports each faction's (i.e., the athletic department, the faculty, and the university administration) interests. For example, the alternative of failing the student in the course on Issue 1 has a high point value for the faculty because academic integrity is maintained, but has a low point value for the athletic department because failing a course makes the student ineligible to play. The second set of point values corresponds to the importance that each issue has for each faction's interests. For example, the issue of the student's standing on the basketball team is very important to the athletic department, while the instructor's status as a student is of little concern. Each individual was given three scores, one from each of the three factions' point of views. Each faction score was composed of the weighted point values for each faction, summed over all five issues. The overall effectiveness score is thus a product of the three faction scores. Using a multiplicative procedure ensured that the highest effectiveness scores were awarded for solutions that involved the highest degree of balance among the three factions' interests, and that solutions which were highly favorable for one faction but unfavorable for the other two factions received a lower overall effectiveness score.

No points were awarded for an unresolved issue so that participants were rewarded for reaching a decision on all five issues, rather than leaving any issues unresolved. Productivity was therefore simply measured by the total number of issues resolved. Average quality was assessed by comparing the effectiveness scores among

individuals that resolved all of the issues, and analyzing the distribution of alternatives chosen among individuals that resolved each specific issue.

Although there is no reliability or validity data available for the decision-making task, Straus and McGrath's (1994) article has been widely cited, appearing in 441 scholarly articles. Per the author's personal correspondence with Dr. Straus, the task and its scoring system are also frequently requested for use in research experiments.

### **Procedure**

Participants were recruited by signing up for the study using the Human Participation in Research (HPR) website, an online repository for research experiments conducted at the university. In the lab, the experimenter conducted the informed consent process with the participants. Participants first completed a basic demographic questionnaire. Then participants completed a pre-task 72-item personality assessment, which included scales for extraversion, neuroticism, self-esteem, social anxiety, and trait anxiety. The order of the scales in the personality assessment was counterbalanced across participants. Finally, participants completed the individual decision-making task. All participants were reminded that the purpose of the task is to create the highest degree of balance between the interests of the athletic department, the faculty, and the university administration. In order to achieve this balance, participants were also instructed to ignore their own preferences in the case. Individuals in the alone condition completed the decision-making task while completely alone in a room. In the social presence condition, the experimenter remained seated at a separate desk in the corner of the room while the participants completed the task. The experimenter informed the participants

that “I am just sitting here observing and taking notes about the study process. I am not evaluating your performance.” Participants answered one post-task question assessing the extent to which they felt as if they were being evaluated, serving as an assessment of whether participants’ sense of evaluation differed between the two conditions. Total participation time was approximately 30 minutes.

## CHAPTER THREE

### RESULTS

Item scores were summed across scales to yield total scale scores for extraversion, neuroticism, self-esteem, social anxiety, and trait anxiety. Because we hypothesize that the propensity to experience social facilitation is the sum of multiple factors, we combined the five scale scores to create an overall “propensity to experience social facilitation” (PSF) score. Combining the five scale scores into one overall score also contributes to increased statistical power for analyses. To create an overall measure of these five personality traits that have an influence on the relationship between social presence and decision-making, the scale scores for neuroticism, social anxiety, and trait anxiety were first reverse-scored such that higher scores indicate less presence of the given trait. The mean and standard deviation for each personality scale was then calculated and used to standardize the five individual scale scores into  $z$ -scores for all participants. Finally, the five  $z$ -scores were averaged to yield the PSF score. Thus, as PSF increases (i.e., as extraversion and self-esteem increase, and as neuroticism, social anxiety and trait anxiety decrease), an individual’s propensity for experiencing social facilitation increases. We first visually inspected the spread of the personality traits to determine if they were normally distributed.

#### **Observed Distribution of Personality Traits**

In order to draw meaningful conclusions, it is important to ensure that the participant sample demonstrates a wide variety of scores for the five personality traits. Neuroticism and trait anxiety scores were normally distributed with values observed at

both the high and low ends of the scales. Extraversion was also normally distributed, although extremely low values were unobserved. Social anxiety scores were interestingly bimodally, normally distributed with values observed at both the high and low ends of the scale. Self-esteem was the only non-normally distributed personality scale, demonstrating a significant negative skew. However, this finding is not unexpected given that many studies (e.g., Blascovich & Tomaka, 1991) have noted that the distribution of self-esteem scale scores among college students tends to be negatively skewed (i.e., demonstrating range restriction).

### **Correlations between Personality Traits**

We also calculated bivariate Pearson correlations between the five personality traits (see Table 3.1). As expected, self-esteem was moderately positively correlated with extraversion,  $r(47) = .495, p < .01$ , and moderately negatively correlated with neuroticism,  $r(47) = -.595, p < .01$ . Neuroticism and trait anxiety were very strongly positively correlated,  $r(47) = .918, p < .01$ , a finding that is later discussed.

Table 3.1. Bivariate Correlation Matrix for Personality Variables

	Extraversion	Neuroticism	Self-Esteem	Social Anxiety	Trait Anxiety
Trait Anxiety	-.369**	.918**	-.489**	.567**	1
Social Anxiety	-.437**	.563**	-.550**	1	
Self-Esteem	.495**	-.595**	1		
Neuroticism	-.475**	1			
Extraversion	1				

*Note.* Correlation is significant at the .01 level (2-tailed).

## Decision-Making Outcomes

Next, we analyzed the relationship between PSF, experimental condition, and the interaction between PSF and condition as it relates to the three decision-making outcomes—overall effectiveness, productivity, and average quality.

### Overall Effectiveness.

We conducted a hierarchical linear regression analysis, testing the effect of experimental condition (alone vs. social presence) and PSF on overall effectiveness in the first step, and adding the interaction between condition and PSF in the second step (see Table 3.2). Condition did not significantly predict overall effectiveness,  $t(45) = .098$ ,  $p = .923$ . PSF also did not significantly predict overall effectiveness,  $t(45) = -1.197$ ,  $p = .238$ . As hypothesized, the interaction between condition and PSF approached significance,  $B = 1913.882$ ,  $t(45) = 1.962$ ,  $p = .056$ . The interaction between condition and PSF explained an additional 7.7% proportion of the variance, beyond condition and PSF alone, in overall effectiveness scores,  $\Delta R^2 = .079$ .

Table 3.2. Hierarchical Linear Regression for Overall Effectiveness

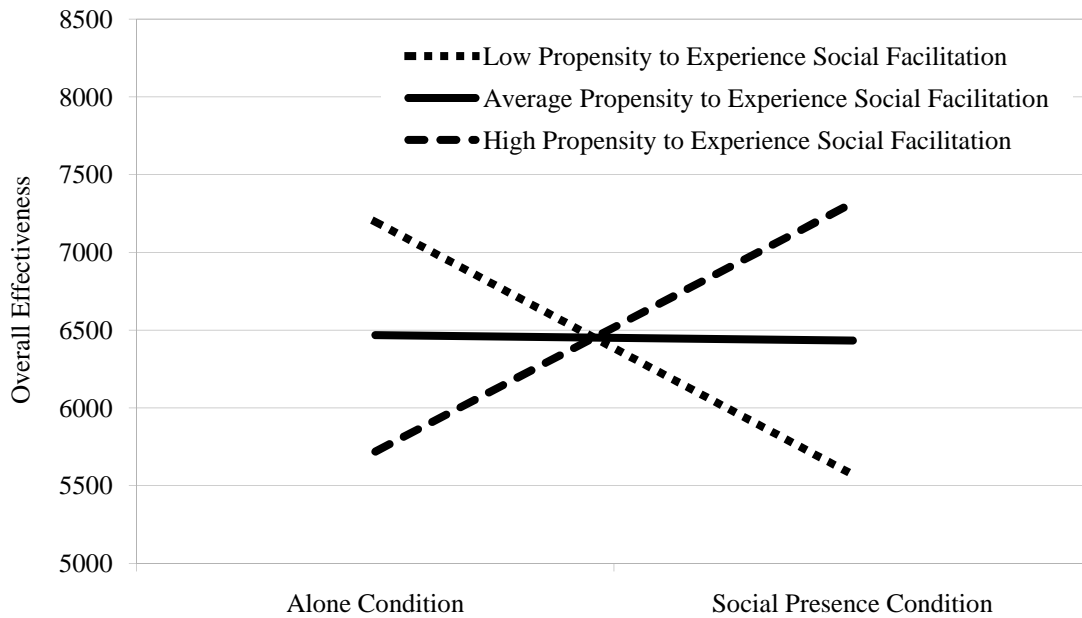
Variables Entered	<i>B</i>	<i>Std. Error</i>	<i>T</i>	<i>Cumulative R<sup>2</sup></i>	$\Delta R^2$
<b>Step 1</b>					
Intercept	6335.114	567.113	—	.002	.002
Condition	76.058	794.111	.096		
PSF	129.448	502.681	.258		
<b>Step 2</b>					
Intercept	6356.690	550.441	—	.080	.079
Condition	75.330	770.612	.098		
PSF	-824.482	688.779	-1.197		
Condition * PSF	1913.882	975.616	1.962 <sup>†</sup>		

Note. <sup>†</sup> $p < .10$



The interaction occurred in the hypothesized direction, illustrated in Figure 3.1. Individuals with a high propensity to experience social facilitation ( $M + 1 SD$ ; PSF = .80) experienced performance facilitation in the social presence condition as compared to the alone condition, such that overall effectiveness scores were much higher in the social presence condition ( $M = 7310$ ) than in the alone condition ( $M = 5698$ ). Individuals with a low propensity to experience social facilitation ( $M - 1 SD$ ; PSF = -.80) experienced performance impairment in the social presence condition as compared to the alone condition, such that overall effectiveness scores were much lower in the social presence condition ( $M = 5562$ ) than in the alone condition ( $M = 7014$ ). Individuals with an average propensity to experience social facilitation ( $M$ ; PSF = .0) experienced no change in overall effectiveness scores between the alone and social presence conditions, such that overall effectiveness scores in the social presence condition ( $M = 6432$ ) did not significantly differ from the alone condition ( $M = 6356$ ). Interestingly, those individuals with average PSF scores made less effective decisions as compared to both the high PSF and low PSF individuals in their optimal decision-making contexts (i.e., in the social presence and the alone condition, respectively).

Figure 3.1. Condition \* Propensity to Experience Social Facilitation Interaction



### **Productivity and Average Quality.**

Productivity is a simple measure of the number of issues that were resolved by participants. Only 1 participant out of 49 failed to resolve all five issues; thus, a ceiling effect eliminated productivity as a meaningful dependent variable.

The average quality of decisions was analyzed in two ways: (1) by comparing effectiveness scores among only individuals that resolved all of the issues, and (2) by analyzing the distribution of options chosen for each of the issues among individuals that resolved that specific issue. Given these analytic methods developed by Straus and McGrath (1994), an analysis of average quality is effectively rendered useless due to the ceiling effect. However, we used the first method of analyzing average quality by removing the one participant who did not resolve all five issues and conducting a simple

linear regression analysis testing the effect of experimental condition (alone vs. social presence), PSF, and the interaction between condition and PSF. We found a slight improvement in the significance of the interaction between condition and PSF as a predictor of overall effectiveness,  $B = 2009.850$ ,  $t(44) = 2.046$ ,  $p = .047$ . The interaction between condition and PSF explained an additional proportion of variance, beyond condition and PSF alone, in overall effectiveness scores,  $\Delta R^2 = .087$ , which is slightly higher than the model  $R^2$  including all 49 participants.

### **Comparison of Specific Personality Traits**

While our primary research question deals with the overall propensity to experience social facilitation, we also wanted to conduct preliminary analyses regarding the effects of certain specific personality factors.

#### **Neuroticism vs. Trait Anxiety.**

We previously explained that neuroticism and trait anxiety are theoretically very similar, but we included both as predictors to resolve the argument between Uziel (2007) and Stein (2009) regarding which is a more appropriate measure in regard to social presence effects. Given that the correlation is  $r(47) = .918$ ,  $p < .01$ , we are unable to test whether neuroticism or trait anxiety is a stronger predictor of social presence effects given the multi-collinearity between neuroticism and trait anxiety.

#### **Social Anxiety vs. Trait Anxiety.**

We ran two simple linear regression analyses to determine if social anxiety or trait anxiety is a better predictor of overall decision-making effectiveness (see Table 3.3). It is important to note that neuroticism was not included in either model due to its high

correlation with trait anxiety. The first regression analysis included extraversion, self-esteem, and trait anxiety as predictors of overall effectiveness. Trait anxiety did not significantly predict overall effectiveness,  $B = -61.154$ ,  $t(45) = -.132$ ,  $p = .895$ . The model explained a small proportion of variance in overall effectiveness scores,  $R^2 = .038$ . The second regression analysis included extraversion, self-esteem, and social anxiety as predictors of overall effectiveness. Social anxiety approached significance as a predictor of overall effectiveness,  $B = 831.470$ ,  $t(45) = 1.755$ ,  $p = .086$ . The model also explained a larger proportion of variance in overall effectiveness scores than the previous model,  $R^2 = .099$ . Thus, social anxiety is a stronger predictor of overall effectiveness scores than trait anxiety.

Table 3.3. Regression for Social Anxiety vs. Trait Anxiety

Variables Entered	<i>B</i>	<i>Std. Error</i>	<i>t</i>	$\Delta R^2$
Model 1				
Intercept	6373.921	393.924	—	.038
Extraversion	-573.201	464.636	-1.234	
Self-Esteem	447.658	495.144	.904	
Trait Anxiety	-61.154	462.923	-.132	
Model 2				
Intercept	6373.920	381.168	—	.099
Extraversion	-765.052	455.145	-1.681 <sup>†</sup>	
Self-Esteem	55.006	490.273	.112	
Social Anxiety	831.470	473.694	1.755 <sup>†</sup>	

Note. <sup>†</sup> $p < .10$ .

### Sense of Evaluation

Finally, we conducted a simple comparison of means to determine if participants in the social presence condition felt a greater sense of evaluation compared to participants in the alone condition. Sense of evaluation in the social presence condition ( $M = 3.240$ ,

$SD = 1.091$ ) did not significantly differ from sense of evaluation in the alone condition ( $M = 3.208$   $SD = 1.250$ ). Rather, participants' sense of how much they were being evaluated was related to participants' social anxiety,  $r(49) = .277, p = .054$ . In the alone condition, participants' sense of how much they were being evaluated was moderately correlated with social anxiety,  $r(24) = .462, p = .023$ . However, in the social presence condition, there was no relationship between sense of evaluation and social anxiety,  $r(25) = .079, p = .708$ . Interpretation of the meaningfulness of these split group correlations is difficult given the low sample size within each group.

## CHAPTER FOUR

### DISCUSSION

We have demonstrated that personality moderates the relationship between social presence and decision-making outcomes. Specifically, we established a propensity to experience social facilitation (PSF) score, which increases as extraversion and self-esteem increase and as neuroticism, social anxiety, and trait anxiety decrease. Individuals with higher PSF scores made more effective decisions when making those decisions in the presence of another person. Individuals with lower PSF scores made more effective decisions when making those decisions without another person present. Finally, individuals with average PSF scores (i.e., average scale scores on all of the personality traits) made equally effective decisions when making those decisions in the presence of another person or without another person present.

The level of decision-making effectiveness for those individuals with average PSF scores was notably significantly lower than for both individuals with higher PSF scores in the social presence condition and individuals with lower PSF scores in the alone condition. Although individuals with average PSF scores performed equally well whether in the presence of another person or alone, indicating that they were unaffected by the experimental manipulation, those with both high PSF scores and low PSF scores can reach more effective decisions when doing so in their optimal decision-making states (i.e., in the presence of others for high PSF scores and alone for low PSF scores). This finding suggests that we can optimize decision-making effectiveness for people who fall at both the high and low ends of extraversion, neuroticism, self-esteem, social anxiety,

and trait anxiety by tailoring the context in which they make decisions; however, people who are at typical levels in terms of personality cannot increase decision-making performance by changing the situation in which decisions are made.

Participants demonstrated a very high level of decision-making productivity. Since the decision-making task was originally structured as a group task by Straus and McGrath (1994), it makes sense that productivity would vary more when analyzing groups because of the introduction of multiple individual personalities and the potential for disagreement. Thus, a measure of productivity proved to not be as meaningful in an individual task given the absence of these complexities.

We next analyzed several issues regarding the specific personality traits that make up the PSF score. We could not draw a conclusion regarding whether neuroticism or trait anxiety is a stronger moderator of social presence effects in decision-making due to the multi-collinearity between neuroticism and trait anxiety. It is likely that the discrepancies between our findings and those of Uziel (2007) and Stein (2009) are due to variations in experimental manipulation. However, from these results, we conclude that neuroticism and trait anxiety are equally strong predictors of social presence effects. We confirmed our hypothesis that social anxiety is a much more significant moderator of social presence effects as compared to trait anxiety. Finally, we contributed to the social facilitation literature by (1) including social anxiety as a predictor of social presence effects, and (2) finding that social anxiety is a stronger predictor of social presence effects than trait anxiety. From this point forward, researchers interested in social

facilitation should include social anxiety in their analysis, a decision which is supported by the sociometer theory literature (cf. Leary et al., 1995) and the findings of this study.

### **Limitations**

There were several limitations to the study which need to be addressed. Although most of the personality variables comprising the PSF score were normally distributed, self-esteem was significantly negatively skewed, which is expected in a population of college students. Using the same manipulation and measurement with another sample (e.g., employees of a large financial firm), we may find different personality distributions, leading to results different from the current study. It is also feasible that college students, given their younger age and lack of experience, may make less effective decisions than the general population, so another sample may demonstrate a different pattern of changes in decision-making effectiveness when making decisions either in the presence of others or alone. However, the topic of the decision-making task was very relevant to the experiences of college students.

The decision-making task required a considerable amount of social intelligence, which may have stacked the deck in favor of significant findings related to social anxiety. Finally, it is important to note that the sample size, especially when making comparisons between the alone and social presence conditions, is relatively small.

### **Future Research**

Given these limitations, future research should attempt to examine the same hypothesized relationship in a variety of samples. The hypothesized relationship between social presence, personality traits, and decision-making outcomes might be opposite of



the relationship found in the current study when other types of decision-making tasks are used. We found that affiliative individuals make better decisions in the presence of others; however, there are other types of tasks, such as those involving the detection of danger or a more realistic, rather than optimistic, sense of one's own abilities for which a more negative mood may lead to better decision-making. Under certain circumstances, a sense of optimism may lead to overconfidence or lack of caution, and if the task is such that overconfidence or lack of caution are heavily penalized, individuals who are more realistic may perform better on those tasks. Future studies could examine the relationship between social presence, personality, and decision-making in tasks where caution is negatively evaluated and where risk is valued. It is also plausible that real-world tasks, rather than hypothetical tasks such as the one used in this study, may be of higher complexity and involve higher stakes.

Another direction for future studies is to extend this theory to group decision-making. The use of groups introduces several other complexities into the decision-making environment, such as group cohesion, perceived similarity, and the introduction of multiple, and most likely different, personality types. An interesting direction would be to examine the same hypotheses in a group decision-making scenario, comparing groups with homogeneous (i.e., affiliative and avoidant groups) and heterogeneous personalities. Future research should also examine social presence effects in other types of group tasks. McGrath (1984) suggested that group tasks can be classified into one of four categories of basic processes, namely *generate*, *choose*, *negotiate* and *execute* tasks. Decision-making tasks such as that used in the current study are a part of the choose

category, along with intellectual tasks. The generate category involves generating ideas and plans through creativity and planning tasks, the execute category involves executing performance tasks and resolving conflicts of power through competitive and psychomotor tasks, and the negotiate category involves resolving conflicts of viewpoint and conflicts of interest through cognitive conflict and mixed-motive tasks. Future research should examine social facilitation effects using these other types of group tasks.

## CHAPTER FIVE

### CONCLUSION

Since its introduction in 1898, social facilitation theory has focused solely on the impact of social presence on performance in individual tasks. Given this study's findings of social facilitation effects in decision-making, it is necessary to revise this traditional definition of social facilitation. Although task performance is an important component of the everyday duties of employees in the corporate world, decision-making is an even more crucial and complex component of employee responsibilities. Social presence has a proven influence on decision-making effectiveness. Using personality as a moderator, this theory implies that individuals who are affiliative experience benefits from social presence while engaging in decision-making, while others who are avoidant suffer detriments from social presence while making decisions. The goal of any business is to enable employees and managers to make efficient, productive, high-quality decisions. For those with high extraversion and high self-esteem, they may be optimal decision-makers while under the supervision or observance of others. For those with high neuroticism, high anxiety, and low self-esteem, they may be optimal decision-makers while working alone. An understanding of employees' personality can provide managers and supervisors with the ability to tailor decision-making scenarios to obtain the most effective outcome.

## APPENDICES

## Appendix A

### Personality Assessment Items

#### Extraversion (20-item scale; Cronbach's $\alpha = .91$ )

- + Scored: Feel comfortable around people.  
Make friends easily.  
Am skilled in handling social situations.  
Am the life of the party.  
Know how to captivate people.  
Start conversations.  
Warm up quickly to others.  
Talk to a lot of different people at parties.  
Don't mind being the center of attention.  
Cheer people up.
- Scored: Have little to say.  
Keep in the background.  
Would describe my experiences as somewhat dull.  
Don't like to draw attention to myself.  
Don't talk a lot.  
Avoid contact with others.  
Am hard to get to know.  
Retreat from others.  
Find it difficult to approach others.  
Keep others at a distance.

#### Neuroticism (20-item scale; Cronbach's $\alpha = .91$ )

- + Scored: Often feel blue.  
Dislike myself.  
Am often down in the dumps.  
Have frequent mood swings.  
Panic easily.  
Am filled with doubts about things.  
Feel threatened easily.  
Get stressed out easily.  
Fear for the worst.  
Worry about things.
- Scored: Seldom feel blue.  
Feel comfortable with myself.  
Rarely get irritated.  
Am not easily bothered by things.  
Am very pleased with myself.

Am relaxed most of the time.  
Seldom get mad.  
Am not easily frustrated.  
Remain calm under pressure.  
Rarely lose my composure.

Self-Esteem (10-item scale; Cronbach's  $\alpha = .88$ )

+ Scored: I feel that I am a person of worth, at least on an equal basis with others.  
I feel that I have a number of good qualities.  
I am able to do things as well as most other people.  
I take a positive attitude toward myself.  
On the whole, I am satisfied with myself.

– Scored: All in all, I am inclined to feel that I am a failure.  
I feel I do not have much to be proud of.  
I wish I could have more respect for myself.  
I certainly feel useless at times.  
At times I think I am no good at all.

Social Anxiety (12-item scale; Cronbach's  $\alpha = .90$ )

+ Scored: I am frequently afraid of other people noticing my shortcomings.  
I am afraid that others will not approve of me.  
I am afraid that people will find fault with me.  
When I am talking to someone, I worry about what they may be thinking about me.  
I am usually worried about what kind of impression I make.  
Sometimes I think I am too concerned with what other people think of me.  
I often worry that I will say or do the wrong things.  
I worry about what people will think of me even when I know it doesn't make any difference.

– Scored: I rarely worry about what kind of impression I am making on someone.  
Other people's opinions of me do not bother me.  
If I know someone is judging me, it has little effect on me.  
I am unconcerned even if I know people are forming an unfavorable impression of me.

Trait Anxiety (10-item scale; Cronbach's  $\alpha = .83$ )

+ Scored: Worry about things.  
Fear for the worst.  
Am afraid of many things.  
Get stressed out easily.  
Get caught up in my problems.

- Scored: Am not easily bothered by things.  
Am relaxed most of the time.  
Am not easily disturbed by events.  
Don't worry about things that have already happened.  
Adapt easily to new situations.

## Appendix B

### Decision-Making Task Alternatives

#### Issue 1: Jack's grade in the course

- 1a. Give Jack his original grade on the exam (a D).
- 1b. Give Jack a failing grade on the exam.
- 1c. Give Jack a failing grade in the course.

#### Issue 2: Jack's status on the basketball team

- 2a. Make no change in Jack's basketball eligibility.
- 2b. Suspend Jack from the next basketball game.
- 2c. Suspend Jack from the basketball team for the rest of the season.
- 2d. Suspend Jack from the basketball team for an indefinite length of time and require that he appeal to be reinstated.
- 2e. Kick Jack off the team.

#### Issue 3: Jack's status as a college student

- 3a. Make no change in Jack's college status.
- 3b. Give Jack a warning, stating that if he is involved in another incident involving cheating in the future, he will be expelled.
- 3c. Suspend Jack from college (classes and athletics) for the rest of the semester.
- 3d. Suspend Jack from the college for an indefinite length of time and require that he appeal for readmittance.
- 3e. Expel Jack from the college.

#### Issue 4: Tom's status as an instructor (Note: If Tom is restricted from teaching, he loses a source of income that helps pay his way through graduate school.)

- 4a. Make no change in Tom's teaching status.
- 4b. Give Tom a reprimand to be placed in his permanent record, which will be seen by potential employers after he is finished with school.
- 4c. Suspend Tom from teaching for the rest of the semester.
- 4d. Suspend Tom from teaching for an indefinite length of time and require that he appeal to be reinstated.
- 4e. Do not allow Tom to teach again during his time remaining in graduate school.

#### Issue 5: Tom's status as a graduate student

- 5a. Make no change in Tom's college status.



- 5b. Give Tom a warning, stating that if he is involved in another incident involving cheating in the future, he will be expelled.
- 5c. Suspend Tom from the college for the rest of the semester.
- 5d. Suspend Tom from the college for an indefinite length of time and require that he appeal for readmittance.
- 5e. Expel Tom from the college.

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